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A. Müller / T. Schmidt / H. Witte

Miniaturized dosimeter for an individualized prevention of hearing loss

In current ergonomics, for prevention of hearing loss, the usefulness determination of fixed and reproducible relations of physio-physical stresses and resulting individual strains are generally underrestimated. These relations are often hypothesized without prove. If proved,
their control in the working environment and in daily life is difficult. To support ergonomics in solving this problem, biomechatronics may provide adaptive miniaturized dosimeters. Dosimeters are used for evidence-based prevention of damage so that reproducibility of “noise-dose-effects” will be enabled. Noise measurment systems are supposed to transform readings of the same external stresses for different individuals into a measure of individual strains. Future research on strain should concentrate on the simultaneous identification of measurements for disposition and the assessment of stresses by loading. Using the current progress in MEMS-technologies, biomechatronics is on its way to develop a "Personalized Miniaturized mechatronic Dosimeter (PMD)" for the prevention of noise-provoked damages in hearing.
The purpose of the project is to develop a procedure and an setup which allows a precise quantification of individual stress and strain for an employee exposed to noise. The focus is put on a miniaturized device with personalized adaption (e.g., ITC-sensor - In The Canal) for each individual, and high data resolution (e.g. wireless frontend) for precise and comprehensive determination of binaural noise exposure or strain.

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